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Consultation on the Food-Processing Industry
with Emphasis on Fruit and Vegetable Processing

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INTERNATIONAL CO-OPERATION*

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I. Introduction

1. The status of the development of the fruit and vegetable industry widely varies among countries and regions. There are, however, common concerns and objectives, namely,

a) to derive added value from raw material resources

b) to increase market shares in both domestic and export markets

c) to foster the process of industrialization through integrated development of agro-industries

d) to strengthen the linkages between upward and downward allied industries (engineering, chemical, energy, small-scale industries)

e) to reduce losses and waste.

2. The industry itself is characterized by a variety of different factors. The first factor is raw materials, depending on the natural endowments of producer countries - climate, soil, altitude, agricultural capabilities of producers, harvesting and storage methods.

3. The second factor is a great variety of forms and sizes of food and vegetable processing units, ranging from village industry type with simple equipment and few or no employees to large scale units with sophisticated and capital intensive equipment. The production of the sector has different forms depending on the degree of processing ranging from very simple treatment to more advanced and more complicated processing.

4. Another important factor is marketing. Marketing plans are formulated on the basis of analysis of market information.

5. All elements of marketing, such as product design, pricing, promotion, distribution should be integrated in a comprehensive strategy that will set up optimal balance between local and export market demands.

6. The fruit and vegetables industry can only function economically with the creation of an effective and viable linkage between agricultural producers and the processing industry. This provides for vertical and horizontal integration of the fruit and vegetable processing industry. This could be well done by farmers producing the right varieties of products with appropriate quality for processing industry through contracts and delivering their products to adequately sited processing industry.

7. In view of multiple types of raw materials, levels of processing technologies utilized, sizes of processing units, degree of sophistication of markets there can therefore be no standard approach in dealing with the fruit and vegetables processing industry.

II. The role of international organizations

8. In such questions as perspectives, appropriate national policies, assistance of international organizations may help to clarify basic obstacles of the sector development, encourage growth of the sector and contribute to ensure adequate raw material supply, profitable processing activities, successful market operations and proper financing arrangements.

9. The international organizations such as United Nations Industrial Development Organization (UNIDO), Food and Agriculture Organization of the United Nations (FAO), United Nations Conference on Trade and Development (UNCTAD), the International Trade Centre (ITC) and others, can help the developing countries to achieve these objectives.

10. UNIDO through the activities of the System of Consultations contributes to the development of the sector by:

a) defining major issues and areas that represent constraints to the industrial development process in developing countries

b) formulating and co-ordinating policies to overcome those constraints

c) identifying opportunities for investment promotion, technology transfer and development and technical assistance programmes through effective international industrial co-operation

d) initiating and promoting action-oriented programmes and projects for implementation in selected industrial sectors

e) providing developing countries with guidelines on the development of specific sectors.

11. FAO monitors the world food and agriculture situation, collects, analyzes and disseminates information in this field, pursues a food policy and conducts studies, mobilizes investment and financial aid for the developing countries.

12. UNCTAD is a principal instrument of the UN General Assembly for deliberation and negotiation in the field of international trade and related issues of international economic co-operation.

13. ITC carried out different projects in the areas of trade information, product and market development and export development of commodities in all developing regions.

14. Many of the developing countries depend on exports of processed fruits and vegetables to finance the imports necessary for their development and functioning of their economies. International organizations such as UNCTAD and FAO made efforts to help the developing countries to improve their trading position. Development of South-South trade can make an important contribution. The main obstacles to increasing export earnings seem to be limited access to export markets, owing to protectionism of industrialized countries and instability of prices.

15. Improvement of the scientific and technological capacities of the developing countries is essential for their sustained and accelerated development. International organizations (UNIDO, FAO, ITC) focus their research support activities on strengthening national research capabilities and also on fostering research collaboration at the regional, interregional and global levels. These research activities are mainly aimed at increasing production of fruit and vegetable processing industry, introduction of new technologies, problems of quality of raw materials supply.

16. Another international organization at the regional level, the Economic and Social Commission for Asia and the Pacific (ESCAP) has done considerable work in the field of production, processing and marketing of agricultural commodities e.g. coconut, pepper, oilpalm, etc., with UNIDO technical support and co-operation. At the subregional level, the Association of South-East Asian Nations (ASEAN) has implemented a number of sub-regional projects particularly in the food processing industry, which includes processing of fruits and vegetables.

17. In general, active and productive participation of such international bodies as FAO, UNIDO, UNCTAD, ITC, and UN Economic Commissions could help the developing countries to solve their basic problems in the development of this sector, for example, mobilization of financial resources, productivity, improvements of the fruit and vegetable processing, transfer of appropriate technology, data base on markets and exchange of information.

III. Financing

18. The governments of the developing countries could play a key role in encouraging the development of the agro-industrial sector through consistent policy and rational planning and increased linkages with the industrial sector. Development of the sector could generate employment opportunities, foreign exchange earning through increased exports and strengthen the industrial base.

19. Successful mobilization of the sector for real social and economic growth requires the formulation of a programme for an integrated supply system that provides for production, processing and marketing as interdependent functions. In this case government policies and budgetary allocation must be made for:

-increasing productivity and quality of production

-installation and extension of infrastructural facilities -storage, roads, transport, supply of water, electricity, communication services, etc.

-supply of agricultural inputs -fertilizers, pesticides, tools, agro-machinery

-promotion of investments through the grant of financial and fiscal assistance to primary and secondary producers

-setting up or strengthening of institutional support organizations for distribution of agricultural inputs, marketing of off-farms produce,

extraction services, provision of finance, creation of co-operatives and export marketing.

20. Financial aspects are connected with the procurement of adequate and permanent supplies of raw material and other inputs. Efforts should be made to extend the harvest period e.g. by using planting methods that utilize different seeds to obtain early or late crops or by irrigation, glasshouses, hydroponics which may make it possible to obtain more than one crop per season. In any case, an appropriate time picking, improvement of perishability aspect of raw materials, proper handling and storage is certainly one essential way to extend the season for the supply of raw materials.

21. In many developing countries, governments or national financial institutions have established a system of agricultural credit which meets the requirements of farmers. The pricing of raw materials is a crucial financial issue for processors in an industry where the material content might, in some cases, reach up to 70 per cent or more of the cost of production. Prices tend to vary greatly during one year or over several years, thereby causing uncertainty in financial planning.

22. One method of stabilizing the cost of raw materials is through purchase contracts with producers. This would not only provide a "long-term" price, but would also ensure the supply. Prices may be fixed on a cost-plus basis, namely a cost to farmers plus a profit margin or a base price which may be paid plus a bonus derived from the final prices obtained for fished goods. Many processors endeavour to add strength to the contractors by providing credits, agricultural inputs, technical assistance e.g. to improve the yield, thus making it more beneficial to both sides.

23. In contracts with farmers, processors may negotiate terms of payment for raw materials, where payment for produce would be made over an extended period. In this way, payment by processor to producer may be staggered in him with receipts from sale.

24. Another way is for processors to make use of forward contracts where the factory's expected output would be sold in advance at a fixed price expected to cover costs and preserve a margin of profit. In this case, the risk on end-market price is carried rather by the buyer than by the processor. Besides, such contracts may be accepted by banks as back-to-back security to provide commensurate overdraft credit facilities.

25. However, development of industry requires large amounts of capital and the improvement of infrastructure, but, in many cases developing countries are not able to mobilize the necessary funds internally; that is why the increased and effective flow of aid from the international community would remain vitally important.

26. Before investments are planned for the establishment of new industrial plants, a programme of rehabilitation and restructuring of existing industrial capacity should be undertaken for which assistance from international, financial and technical institutions could be sought.

27. Mobilization of financial resources should be undertaken on a broad scale particularly provision of equity and concessionary loans. Wider information on financing possibilities offered by financing institutions as well as donor countries in terms of a) joint ventures, b) different kinds of loans, c) barter agreements, d) donations, should be provided. In this connection the investment promotion activities should be tailored to the specific needs of the fruit and vegetables industry.

28. With regard to joint venture, the foreign partner would provide the necessary technology, equipment, management, technical support and access to market. In general, the fruit and vegetable processing industry is one of the least developed industries in many countries, and a set of urgent financial and economic measures are needed to improve its future prospects through international co-operation aimed at facilitating access to financial resources.

IV. Technology

29. Crucial factors in the development of the processing of fruit and vegetables are adequate processing technology, acquisition of processing know-how, machinery and equipment, packaging, etc. Improved technology is the driving force behind the agricultural growth.

30. All these factors impede the development of this sector in developing countries. There is an urgent need for technologies for processing tropical fruits such as papaya, mango, passion fruit, etc. as well as sophisticated technologies used in developed countries to give to processed fruits more and more a "fresh look" and taste. Success and efficiency of the sector production depends on the choice of the most suitable technology, review of alternative technologies which can include canning, freezing, bottling, dehydration, preserving, pickling, extraction, frying, toasting, fermentation and irradiation, as well as packaging.

31. In general the fruit and vegetable processing industries in the developing countries need rehabilitation and reorganization of technologies in order to make them efficient and competitive.

32. The unavailability and high costs of appropriate packaging affect the total price of the product up to 40-50 per cent. Special efforts should be undertaken to reach availability of low-cost local packaging materials, packaging equipment, and design.

33. These measures will raise the competitiveness of a country's fruit and vegetable processing industry. Efforts should also be concentrated on strengthening existing regional technology centres, which could provide countries in different regions with information, consultation and legal advice in all technology related fields in the framework of South-South co-operation. An important task for the future will be to develop, using both traditional and new research techniques, technologies that can help developing countries satisfy their production needs.

34. In this case there is a need to broaden North-South co-operation so as to cover transfer of technology, investment in agricultural production, opportunity studies identifying the most suitable type of agricultural production.

35. Utilization of domestic materials and resources could reduce cost of packaging for developing countries. Many countries also encourage, through incentives for research and development, the substitution of domestic raw materials for costly imports; with assistance of such international organizations as UNCTAD, UNIDO, FAO, the International Trade Center and others developing countries can select indispensable domestic materials for packaging and appropriate technology.

36. With regard to packaging requirements, conditions vary considerably from country to country, even within the European Community. Most European countries have numerous laws and degrees that regulate packaging and labeling. There are still many problems of comprehensive harmonization of legislations in this field which should be considered before the European Common Market is formed on 1 January 1993.

37. The situation in the field of packaging requirements is similar in most industrialized countries, raising explicit difficulties for exporting countries.

V. Equipment

38. Essential conditions for reaching and keeping the planned productivity level are appropriate and modern equipment, maintenance of industrial parts and availability of spare parts.

39. Cost of equipment is high to developing countries, especially in terms of spare parts, maintenance service, etc. Equipment, machinery and spare parts are imported from developed countries and often the imported technologies are not suitable and appropriate for the existing socio-economic conditions. Moreover, various imported equipment and machineries utilized for processing are of different types, capacity and efficiency. Another sensitive area is maintenance service and spare parts supply.

40. As far as equipment is concerned, closer contacts should be established and maintained between technology, engineering and equipment suppliers and users in the entire range of contractual operations, i.e. from the selection of equipment to the supply of spare parts and assurance of post-sale services; besides, local design and production of equipment and spare parts in developing countries should be fostered through regional co-operation and through the setting-up of small-scale workshops at country levels.

41. Special attention should be given in short term to strengthening or establishing national, regional repair and maintenance workshops and service network and upgrading capabilities of local technicians.

VI. Questions Related to Market

42. Market evaluation and promotion for fruit and vegetable production are of crucial importance for local consumption and international trade. Access to and better exchange of the market information is of crucial need for the development of this sector. An inadequate market analysis frequently leads to failure of firm's plans and projects. Recognition of a market opportunity and application of an appropriate technology are the important factors here.

The assessment of demand for processed fruits and vegetable producers by local consumption has to be balanced with the assessment of external demand. Local consumption requires information about potential changes in consumer demand.

43. Assessment of the market position of medium and small farmers in the developing countries suggested that one of the most favourable is that of participant in a production/marketing contract system for a particular crop organized by an enterprise with assured market outlets for the crop after processing. A full set of services is received on credit. It is likely to be based on specific research and be backed by the direct provision of seeds, pesticides, fertilizer on credit, etc. Individual private marketing enterprises in the framework of local market have advantages in readiness of quick response to changing market situation, very low cost operations, high confidence and low risk during the market operations using family ties. Limitations of private trader structures are: constraints or access to financial sources, varying management capacity.

44. The marketing efficiency of a group of farmers is increased by joint use of transport and other facilities, raising bargain power in sales transaction, availability of local leadership and management. The main problem of participation of co-operatives in marketing are: optimization of marketing opportunities due to limited marketing expertise, quality management.

45. Agricultural marketing boards are autonomous in their day-to-day operations but directly responsive to government policy. They are convenient instruments for the allocation of public capital and implementation of government price policies. Advantage of a government marketing organization coincides in its its eligibility for external aid, because most of the agencies including the international financing organizations need official counterparts.

46. Transnational corporations have a range of advantages, such as, possibility to mobilize capital funds at the lowest cost, supply of applied technology, qualified management experience, experience in meeting quality standards which leads to successful export marketing, access to market.

47. Emphasis should be placed on the importance of reaching an optimal balance between local and export market demands. The international market plays an important role in the development of less known tropical fruits (mango, papaya, chirimoya, kiwi and the like) and vegetable production. Introduction of these products in sophisticated markets like the European countries, the United States, Japan requires a great deal of efforts to adapt production to the market requirements in respect to acceptance of new flavours, finding proper ways to promote new products and making them attractive in terms of price.

48. Tropical goods account for more than half of merchandise exports of developing countries, including many poorest countries according to UNCTAD.

49. Income of tropical producers was US$ 37 billion in 1985, about half of all farm and forestry exports and 8 per cent of their total merchandise sales.

50. As an illustration, Brazil's estimated production of orange juice concentrate alone is 600,000 tons per annum, of which 550,000 tons are exported, resulting in a foreign exchange earning of US$660 millions.

51. Other countries such as Philippines and Thailand export substantial quantities of canned pineapple valued at US$120 - 130 million and US$150 million respectively. The developed countries are the recipients of most of the export of processed fruits and vegetables from developing countries. New elements under discussions with the aim to improve process of international trade liberalization dealt with recently signed agreement between the European Community, the United States, Japan and others. Reduction of tariffs on tropical products can bring net benefits to the producing countries.

52. In this connection great efforts should be devoted to a comprehensive and thorough economic analysis of the market forces as well as the structural aspects of trade in processed fruits and vegetables in order to reach a better understanding of the present situation and perspectives. An analysis of the external factors should encompass the role of the UN system, international organizations such as UNIDO, FAO and ITC which could assist the developing countries in this field.

VII. Final Considerations

53. In light of the considerations outlined above, the Consultation Meeting may wish to examine the following proposals with a view to reach conclusions and formulate recommendations for promoting international co-operation to overcome the constraints faced by the developing countries in the development of the fruit and vegetable processing industry, namely:

(a) Technical co-operation

Orientation of bilateral and multilateral technical co-operation to give a sharper and increased focus on the fruit and vegetable processing industries and specifically in regard to:

--strategic planning of the sub-sector as an integral part of agro-industrial systems and rural development programmes;

--formulation and implementation of policy and incentive policy measures;

--rehabilitation and restructuring programmes and projects;

--capacity and capability development for planning and implementing new productive facilities particularly in regard to market development and market intelligence and investment promotion

with emphasis on main aspects such as:

--entrepreneurship development;

--productivity improvements;

--research and development, product design, adaptation;

--packaging;

--quality control and standardization;

--training;

(b) Technological co-operation

-choice, transfer and adaptation of technology;

-alternative technologies, flexible production processes and polyvalent plants;

-exchange of information and experiences among technology centres

-guideline/checklist for the purchase of technology/equipment and related services including production/supply of spare parts and provision of repair and maintenance services;

-twinning arrangements between R+D centres in industrialized and developing countries in regard to joint research work and exchange of information and experiences;

-consultancy engineering services;

(c) Financial co-operation

-Joint venture arrangements: equity, marketing and management services;

-Sub-sectoral financing needs and modalities for the mobilization of financial resources in light of the specific raw-material, working capital and operational requirements;

-Loans and credits from international and regional financial institutions on concessionary basis for the agro-industries sector and the fruit and vegetable processing sub-sector in particular in light of the food supply and security objectives of the developing countries;

-Capacity and capability development in the developing countries for the identification, formulation and implementation of investment projects;

-Investment promotion: institutions, programmes and projects;

-Linkage of financing of agricultural input industries, raw-material supply, processing, packaging and marketing of food-processing products.

(d) Market development and marketing

-Mechanisms and procedures for information gathering and analysis of the demand prospects of the industrialized countries for the producers of the developing countries;

-Policies and programmes which increase the share of the developing countries in export markets;

-Mechanisms and instruments that could be created to assist the developing countries plan their investment programmes in the sub-sector;

-Demand prerequisites that would determine the marketing strategies of the developing countries.

(e) Institutional framework and mechanisms for enhancing international co-operation

-Advisory committee of experts to monitor the implementation of the recommendations of the Consultation meeting;

-Regional network for promoting co-operation in investments, technical assistance and capacity building;

-Programme of regional and interregional co-operation in investments, technical assistance and capacity building;

-Network of financial and development banking institutions to co-ordinate their lending institutions in the fruit and vegetable processing sector;

-Tripartite co-operation whereby the technological potentials of the industrialized countries in centrally-planned and market economies could be utilized in conjunction with the financial resources of the developing countries and regional institutions to invest in new productive capacities and/or rehabilitating existing ones;

-Training of skills at all levels: planning, pre-investment and feasibility studies, investment and technology packaging, construction and start-up, operations, management and marketing and re-investment.